Appendix B. Estimating Forms

The attached forms summarize the information needed to make proper comparisons between candidate filter systems. Labor costs for the first form are derived from the second form. The second form includes the major items involved in replacing filters in a contaminated exhaust system—additional factors may have to be added for a particular system. A separate cost analysis (first form) must be made for each bank of components for each combination to be prepared. The total system cost is the sum of the costs of the individual banks.

AIR FILTER SYSTEM COST ANALYSIS

Location: _____ Capacity: _____ cfm. Resistance: Clean _____ in.wg. Average: _____ in.wg.

Filter unit, manufacturer and model: _____ Filter unit dimensions: _____ × _____ × _____

Estd filter life: ___ mo. *System life:* _____ years. *Hours of operation per year:* _____ Escalation: Labor ___ %/year. Materials: ___ %/year. Power: ___ %/year.

Capital costs	Dollars
Mounting frame	_____
Additional support structure, service galleries, etc.	_____
Filter auxiliaries (loading, cleaning equipment, etc.)	_____
Filter units (initial set)	_____
Housing	_____
Blower, motor, and mounting	_____
Controls and instrumentation	_____
Remote handling equipment (if required)	_____
Wiring and utilities	_____
Labor (Hours Rate Burden)	
Mechanical	_____
Electrical	_____
Space _____ sq ft at $_____/sq ft	_____
Total capital cost	_____

Annual operating costs

Amortization at _____ % interest

Power cost, (___hp) × (778) × (__$/kWhr) × (____hr) = _____

(see Note)

Maintenance

	Dollars per 1000 cfm	Changes per year	Total cost (dollars/year)	Escalation rate	Adjustment cost*
Replacement filters	_____	_____	_____	_____	_____
Medium coating mtls**	_____	_____	_____	_____	_____
Encapsulation mtls**	_____	_____	_____	_____	_____
Cleaning costs**	_____	_____	_____	_____	_____
Disposal*	_____	_____	_____	_____	_____
New material storage	_____	_____	_____	_____	_____
Labor at ___hr/unit	_____	_____	_____	_____	_____

Total average annual maintenance costs _____

*Adjustment for estimated future cost increases.

**If required.

Total average annual cost: $_____

Total cost for ____ *years:* $_____

Note: $hp = (cfm \times \Delta p)/(6356 \times eff)$

where eff = (motor efficiency) × (fan efficiency)

LABOR COST ESTIMATING FORM FOR INTERNAL COMPONENTS OF RADIOACTIVE EXHAUST SYSTEM

	Personnel		Time	
	Type	Number of men	×hours	× man-hours
Make ready	Supervisory			
Planning				
Move new components to installation site	Technician			
Inspect				
Prepare area: place barriers, floor coverings, etc.				
Dress mechanics: coveralls ☐ shoe covers ☐ respirators ☐ tape clothing ☐	Mechanic			
Other				
Replace prefilters, demisters, HEPA filters, adsorber cells	Supervisory			
Demisters: quantity				
Prefilters: quantity	Technician			
HEPA filters, first stage: quantity				
Adsorber cells: quantity				
HEPA filters, second stage: quantity	Mechanic			
Bag and or box prefilters, demisters, HEPA filters, adsorber cells				
Other				
Cleanup	Supervisory			
Remove used components to temporary storage area				
Bag and remove tools, etc.; take to decontamination area				
Bag and remove trash				
Clean up area	Technician			
Health physics survey				
Undress mechanics				
Leak test HEPA filter and adsorber banks				
Disposal or shipment to disposal site	Mechanic			
Decontaminate				
Rebalance system				
Other				